

1. (Currently Amended) A method of storing data, from a markup document containing a plurality of elements and a plurality of attributes in a relational database, said method comprising:

storing an element record for every element of said plurality of elements in an element table of said relational database so that said relational database includes a plurality of element records, wherein each element record includes a unique element ID, and an element data set; and

storing an attribute record for every attribute of said plurality of attributes in an attribute table of said relational database so that said relational database includes a plurality of attribute records, wherein said attribute record comprises an attribute data set for one attribute and an element ID of an element to which the one attribute is assigned wherein said element table and said attribute table include content of said markup document and further wherein a new markup document having a same content as said markup document can be constructed using by retrieving said element data set in each of said plurality of element records stored in said element table of said relational database and by retrieving said attribute data set in each of said plurality of attribute records stored in said attribute table of said relational database.

2. (Original) The method of Claim 1 wherein said element data set includes character data.

3. (Original) The method of Claim 1 wherein said element data set contains a parent element ID.

4. (Original) The method of Claim 2 wherein said element data set contains a parent element ID.

5. (Original) The method of Claims 1 wherein said element data set includes an element name.

6. (Original) The method Claim 1 further comprising:
storing, for every unique element name of the plurality of elements, an element name record including an element name and a corresponding unique element name ID in an element name table of said relational database.

7. (Original) The method of Claim 1 comprising:
storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database.

8. (Original) The method of Claim 1 wherein said attribute data set includes an attribute name.

9. (Original) The method of Claim 1 wherein said attribute data set includes an attribute value.

10. (Original) The method of Claim 8 wherein said attribute data set includes an attribute value.

11. (Original) The method of Claim 1 wherein the markup document is an XML document.

12. (Currently Amended) A method of storing data, from a markup document containing a plurality of elements and a plurality of attributes, in a relational database, said method comprising:

storing an element record for every element of said plurality of elements in an element table of said relational database so that said relational database includes a plurality of element records, wherein each element record includes a unique element ID, and an element data set;

storing an attribute record for every attribute of said plurality of attributes in an attribute table of said relational database so that said relational database includes a plurality of attribute records, wherein said attribute record comprises an attribute data set for one attribute and an element ID of an element to which the one attribute is assigned;

storing, for every unique element name of the plurality of elements, an element name record including an element name and a corresponding unique element name ID in an element name table of said relational database; and

storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database wherein said element table and said attribute table include content of said markup document and further wherein a new markup document having a same content as said markup document can be constructed using by retrieving said element data set in each of said plurality of element records stored in said element table of said relational database and by retrieving said attribute data set in each of said plurality of attribute records stored in said attribute table of said relational database.

13. (Original) The method of Claim 12 wherein said element data set includes character data.

14. (Original) The method of Claim 12 wherein said element data set contains a parent element ID.

15. (Original) The method of Claim 14 wherein said element data set contains a parent element ID.

16. (Currently Amended) A memory data structure comprising:

an element table wherein said element table is configured to store a plurality of element records corresponding to a plurality of elements of a markup document so that a relational database includes a plurality of element records, and further wherein each element record includes an assigned element ID field and an element data set field; and

an attribute table wherein said attribute table is configured to store a plurality of attribute records corresponding to a plurality of attributes of said markup document so that said relational database includes a plurality of attribute records, and further wherein each attribute data record includes an element ID field and an attribute data set wherein said element table and said attribute table include content of said markup document and further wherein a new markup document having a same content as said markup document can be constructed using by retrieving said element data set in each of said plurality of element records stored in said element table of said relational database and by retrieving said attribute data set in each of said plurality of attribute records stored in said attribute table of said relational database.

17. (Original) The data structure of Claim 16 wherein the element data set includes a character data field.

18. (Original) The data structure of Claim 16 wherein the element data set includes a parent element ID field.

19. (Original) The data structure of Claims 16 wherein the element data set includes an element number field.

20. (Original) The data structure of Claim 17 wherein said element data set includes an element name field.

21. (Original) The data structure of Claims 16 wherein the element data set comprises an element name ID field.

22. (Original) The data structure of Claim 21 further comprising:

an element name table wherein said element name table is configured to store a plurality of element name records, and further wherein each element name record includes an element name ID field and a corresponding element name field.

23. (Original) The data structure of Claim 16 wherein said attribute data set includes an attribute name and an attribute value.

24. (Original) The data structure of Claim 16 wherein said attribute data set contains an attribute name ID.

25. (Original) The data structure of Claim 24 further comprising:

an attribute name table wherein said attribute name table is configured to store a plurality of attribute name records wherein each attribute name record includes an attribute name ID field and a corresponding attribute name field.

26. (Currently Amended) A computer program product having stored thereon a module for transferring data from a markup document into a relational database wherein execution of said module generates a method comprising:

storing an element record for every element of a plurality of elements of said markup document in an element table of said relational database so that said relational database includes a plurality of element records, wherein each element record includes a unique element ID, and an element data set; and

storing an attribute record for every attribute of a plurality of attributes of said markup document in an attribute table of said relational database so that said relational database includes a plurality of attribute records, wherein said attribute record comprises an attribute data set for one attribute and an element ID of an element to which the one attribute is assigned wherein said element table and said attribute table include content of said markup document and further wherein a new markup document having a same content as said markup document can be constructed using— by retrieving said element data set in each of said plurality of element records stored in said element table of said relational database and by retrieving said attribute data set in each of said plurality of attribute records stored in said attribute table of said relational database.

27. (Original) The computer program product of Claim 26 wherein said method further comprises:

storing, for every unique element name of the plurality of elements, an element name record including an element name and a corresponding unique element name ID in an element name table of said relational database.

28. (Original) The computer program product of Claim 26 wherein said method further comprises:

storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database.

29. (Original) The computer program product of Claim 27 wherein said method further comprises:

storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database.

30. (Currently Amended) A computer system comprising:
a memory having stored therein a module for transferring data from a markup document into a relational database;

a processor coupled to said memory wherein execution of said module by said processor generates a method comprising:

storing an element record for every element of a plurality of elements of said markup document in an element table of said relational database so that said relational database includes a plurality of element records, wherein each element record includes a unique element ID, and an element data set; and

storing an attribute record for every attribute of a plurality of attributes of said markup document in an attribute table of said relational database so that said relational database includes a plurality of attribute records, wherein said attribute record

comprises an attribute data set for one attribute and an element ID of an element to which the one attribute is assigned wherein said element table and said attribute table include content of said markup document and further wherein a new markup document having a same content as said markup document can be constructed ~~using~~ by retrieving said element data set in each of said plurality of element records stored in said element table of said relational database and by retrieving said attribute data set in each of said plurality of attribute records stored in said attribute table of said relational database.

31. (Original) The computer system of Claim 30 wherein said method further comprises:

storing, for every unique element name of the plurality of elements, an element name record including an element name and a corresponding unique element name ID in an element name table of said relational database.

32. (Original) The computer system of Claim 30 wherein said method further comprises:

storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database.

33. (Original) The computer system of Claim 31 wherein said method further comprises:

storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database.